National Renewable Energy Laboratory
Innovation for Our Energy Future

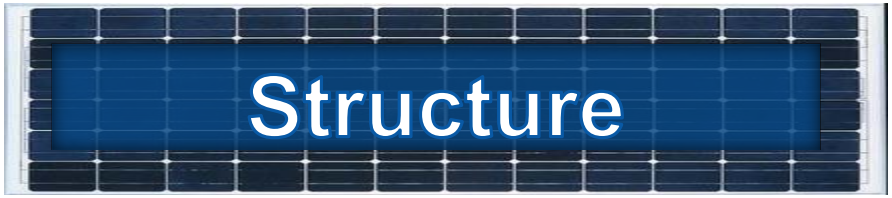
NREL's PV Tools on the Web: The OpenPV Project

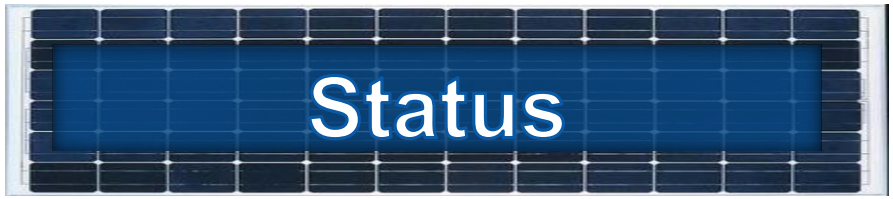
NREL TAP Webinar

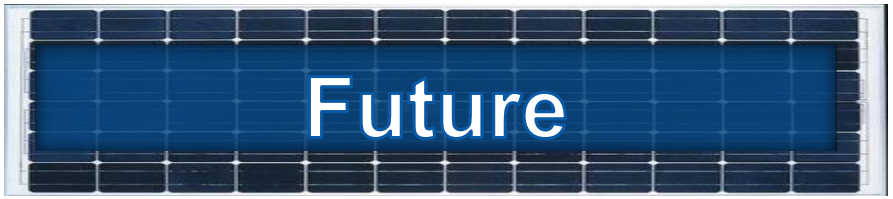
Ted Quinby

March 24, 2010

Overview







Background

Original Concept:

- Collect Data about PV installations in the United States
  - Size
  - Date
  - Cost
  - Location
- Provide public access to PV installation data

Limitations:

- Spreadsheet data storage
- Yearly data updates
- Visualization an afterthought

Background

Revised Concept:

- Develop living, breathing database
  - Leverage user contributions
- Cutting edge data delivery
  - Interactive map-based visualization

New Goal:

- Collaborative effort between government, industry, and the public to build a dynamic, interactive, and comprehensive database of PV installations in the US
  - To build a community

Background

Background

Utilities

Public Users

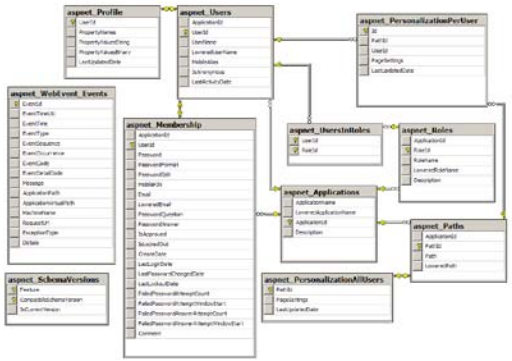
PV Installers

Gov't Agencies

Structure

Data

- A “schema-less” Database
  - 4 required fields:
    - Size, Cost, Date, Location
  - Anything else goes:
    - Incentives, Inverters, Installer, Etc…



=

Structure

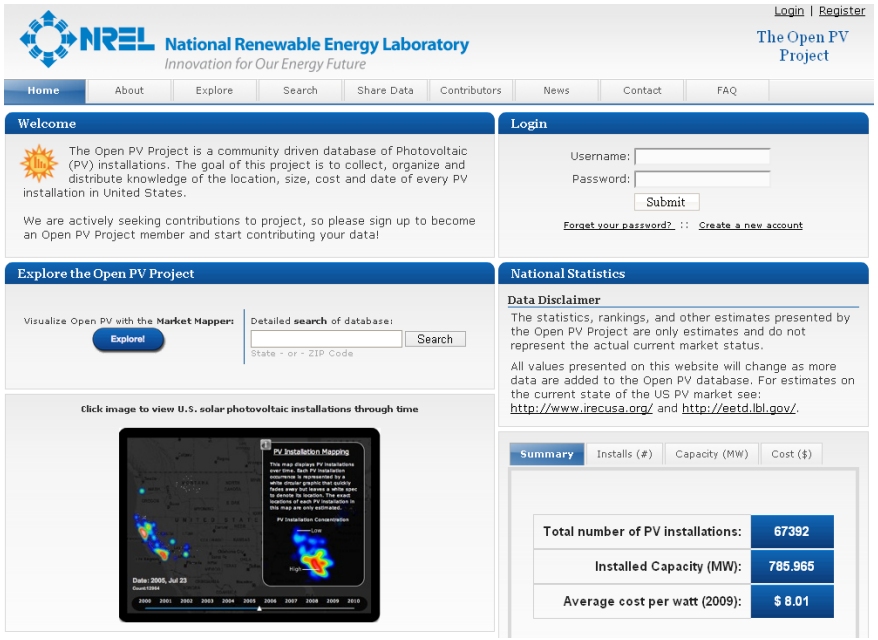
Data

- Data Quality
  - Hierarchical scoring
    - Climbing the “scoring ladder”
  - User feedback
- Data Validation
  - Basic data validation on entry
  - Scheduled data validation routine
- Data Duplication
  - Scheduled data de-duplication routine

Structure

Website

- Info about the project
  - About
  - News
  - FAQ
- Account registration / login
- Data upload
  - Upload one or many records
- Data download
- Data exploration
  - Time mapper
  - Market mapper
  - Search capability



Status

Project Totals (as of 3/23/10)

Number of installs:	69,869
Total capacity (MW):	784.74
Average cost/watt (2009):	$8.01
Registered users:	720
Data contributors:	81

Contributor	# of Installs	Capacity (MW)
NREL	515	75.7
Gov't agencies	62,619	599.4
Utility, installer, public	6,735	109.64

Status

Top 5 States – Number of Installations (as of 3/23/10)

State	# of Installs
California	53,726
New Jersey	5,271
Massachusetts	1,919
New York	1,664
Arizona	1,470

Status

Top 5 States – Capacity (as of 3/23/10)

State	Capacity (MW)
California	489.661
New Jersey	123.938
Florida	29.924
Nevada	28.717
Colorado	28.453

Status

OpenPV vs. other data collection efforts

- IREC Report (through 2008)
  - Grid-tied installations: 69,000
  - Top 10 states capacity: 792 MW
- Tracking the Sun II (through 2008)
  - Installations: 52,356
  - Capacity: 566 MW
- OpenPV (through 2008)
  - Installations: 53,686
  - Capacity: 587 MW

Future

Continue data collection

- Become trusted and authoritative data repository

Enhancements to foster user contributions

- Exposure for top contributors
- Unique contributor specific views of data
- Allow photo uploads and user comments

Advanced tools

- Breakeven scenarios
- Web services (open access to data)

International? Other technologies?

Demo

Current Release - http://openpv.nrel.gov